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I.D. No 29690

## THE FRENCH ATLANTIC LITTORAL

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9. Name and Address of Principal investigator's Organization ECOLE PRATIQUE DES HAUTES ETUDES 61, rue Buffon 75005 - PARIS France		10. Principal Invest. Rept. No 3
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12. Sponsoring Agency Name and Address		13. Key Words (Selected by Principal Investigator) Tidal marsh; littoral; transport; estuary; beaches; wetlands; computer analysis
14. Supplementary Notes Prepared in cooperation with J.M. MONGET and R. REGRAIN		
15. Abstract :  This third progress report gives initial results on Landsat - 2 data received in the corresponding period. During this period 3 scenes taken, on December 19, 1975, were received and evaluated. . . .  The Four CCTS previously ordered have been received and treat- ment has begun.		

**ORIGINAL CONTAINS  
COLOR ILLUSTRATIONS**

Original photography may be purchased from  
EROS Data Center  
10th and Dakota Avenue  
Sioux Falls, SD 57198

## 1 - INTRODUCTION

This report covers the second quarter of 1976 during which number of significant new techniques has been made operational using, LANDSAT-1 data.

Over the same period, LANDSAT-2 data has been received and reformatted to our databank standart (assembly of 4 strips to single scene recording) on direct-access units.

Interpretation, classification and mapping of LANDSAT-2 data has been initiated, singly or in connection with LANDSAT-A data, with emphasis on coastal areas, extending seaward to the extent of coastal sediment transport and landward into saltmarshes, dunes and polders.

## 2 - TECHNIQUES

2-1 : 4 strip records were copied on disk using 3240 pixel/line format to facilitate data processing, especially in areas bisected by strip borders.

2-2 : Various improvements were carried out on our supervised automatic mapping procedures (using IBM 360 and Benson Offline Plotting System) to save program execution time.

2-3 : Time sharing (Tektronix 4013 output linked to IBM 360) : further development of the FRACAM package have made this unsupervised interactive classification system fully operational.

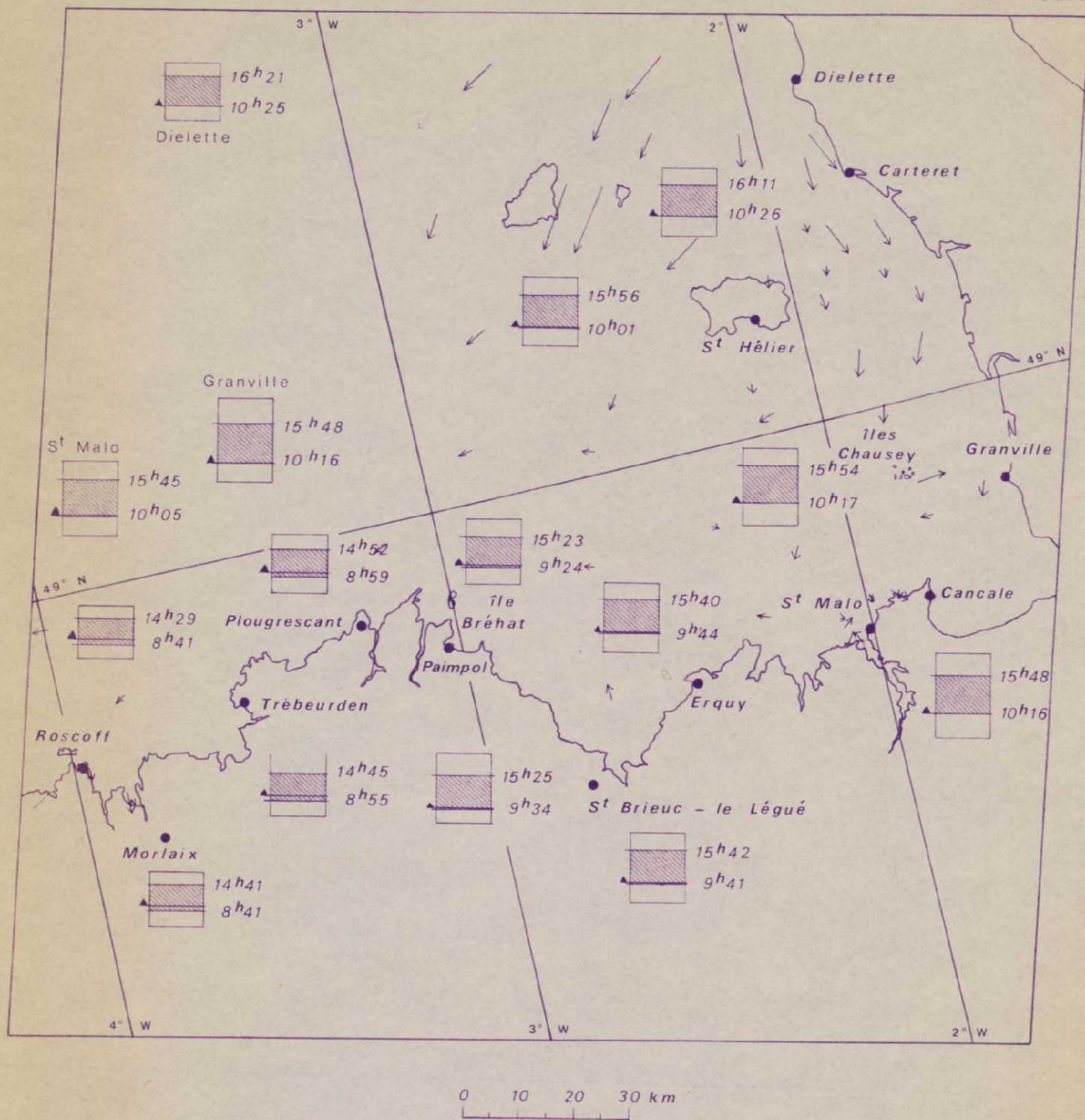
2-4 : A smoothing technique is being tested based on using each pixel in the mapped output from programs (2-2 and 2-3) as the centre of a rectangular or square matrix and replacing this pixel with the modal signature found in the surrounding matrix.

## 3 - ACCOMPLISHMENTS

3-1 : Ground truth : for LANDSAT-2 data, we have continued to draft maps of coastal areas showing directions of currents and tide heights (following pages). Times given are T.U. (Fig. 3.1.1. to 3.1.3.).

3-2 : Application of automatic cartography of LANDSAT-1 data to the Brouage Marsh test-site (see Fig. 3.2.1.).

Some characteristic areas of the marshes have been isolated and investigated. Remote sensing techniques provide a "neotaxonomy" which is usually different and complementary to the customary visual taxonomy.



Tidal currents (1 cm = 1 m/s)

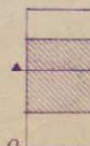
Tidal range and water level (1 mm = 1 m)

June 6, 1975

→ S H O M

Maximum high water springs

— falling tide  
— rising tide



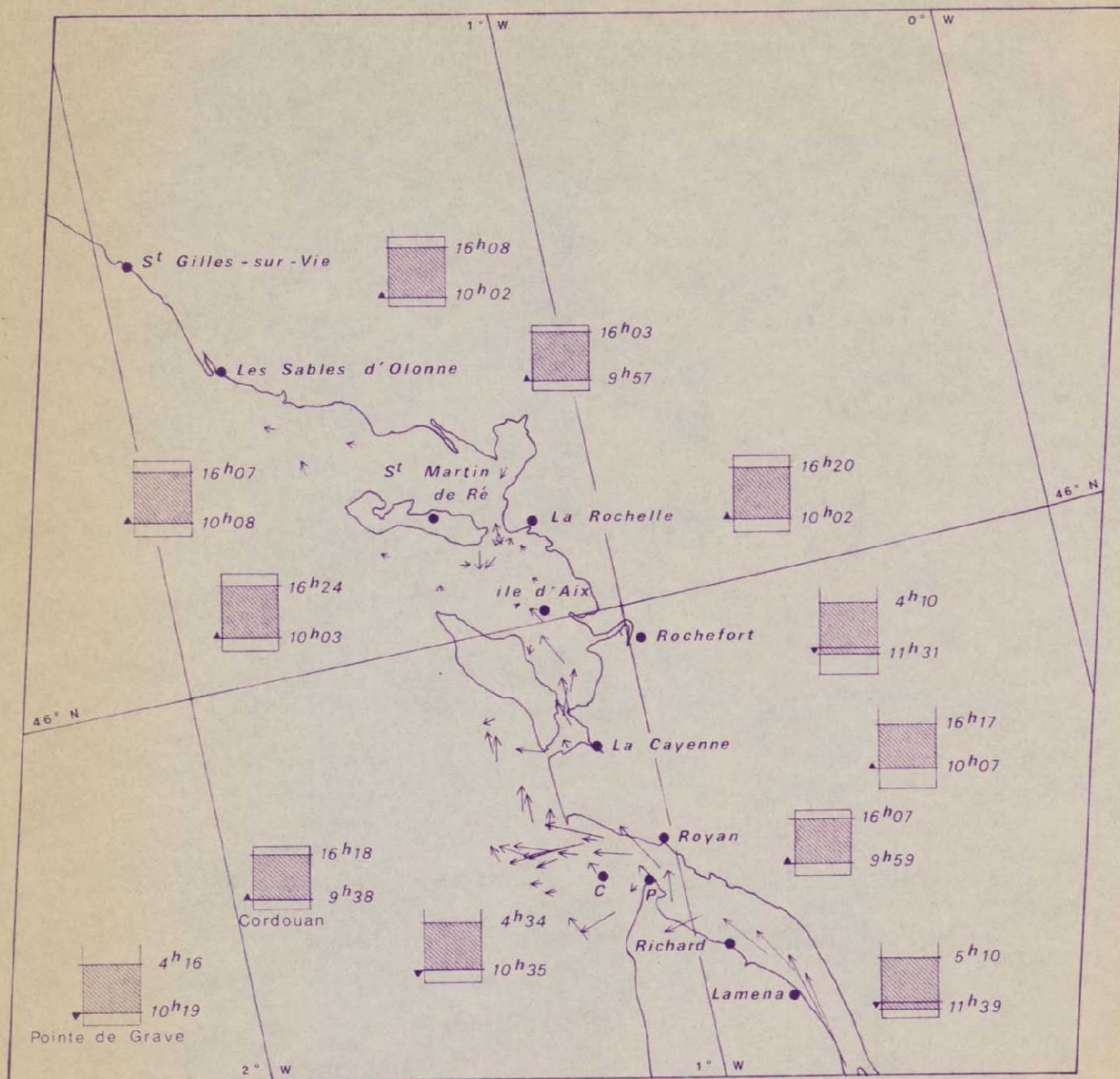
High water  
Tide level 10h23 TU  
Low water

Chart datum 0

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Fig. 3.1.1. : Hydrological ground-truth data.





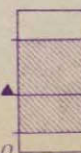
Tidal currents (1 cm = 1 m/s)

Tidal range and water level (2 mm = 1 m)

December 19, 1975

Maximum high water springs

→ S H O M

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 ▼ falling tide  
 ▲ rising tide


High water

Tide level 10h11 TU

Low water

Chart datum 0

Fig. 3.1.3. : Hydrological ground-truth data.

4 - LIST OF PUBLICATIONS

- CAZABAT (Ch), 1975  
"Topologie ertsienne de la France (Premiers résultats).  
Bull. Soc. fr. Photogrammétrie, n° 60, p.21-36, 6 pl.
- DAVID (D.J.), JOLY (G), VERGER (F), 1976  
"Computer Elaboration and Visualisation of Remote-Sensing Data" in "Advances in Earth Observation (Space) Techniques" - Meeting of the British Interplanetary Society - London 22nd - 23 rd September 1976.
- DAVID (D.J.), JOLY (G), VERGER (F), 1976  
"Visualisations et traitements d'images de télédétection par satellites " - Colloque AFCET - Panorama de la Nouveauté Informatique en France - Gif-sur-Yvette - Novembre 1976
- MONGET (J.M.), 1976  
"Remote Sensing Data Processing - Two Interactive Training Programs" - Alpbach Summer School - 24 p.
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"Environmental Mapping of the French Coastal Zone by Remote Sensing" - COSPAR - Paper VI - 10 - Philadelphia.
- VERGER (F), 1976  
"Les données LANDSAT et un exemple de leur utilisation" - Travaux et Documents de Géographie Tropicale, n° 25 : Télédétection et environnement tropical - CNRS - p. 11 - 24 - Mai 1976.
- VERGER (F), 1976  
"L'apport des satellites LANDSAT à la connaissance du littoral français" - L'Ingénieur Constructeur.



5 - DATA QUALITY AND DELIVERY

Since the last report, 3 frames of B/W, 70 mm imagery have been received. Despite certain delays we find that data has been reaching us more regularly (2 to 3 months after coverage).

The four COTS ordered during the last quarter of 1975 have been received and their interpretation has begun.

NASA LANDSAT 2

PROGRAMME FINALITE

DATE	PRODUCT ID	BLACK AND WHITE PRODUCTS				CLOUD COVER (%)	TAPE PRO-DUCT 0=order received	ORBIT NUM-BER	CODE OF FRAMES (L = Littoral)
		MSS (Quality)							
		4	5	6	7				
10 April 75	E2 078-10055	F	P	F	F	30		1083	FLANDRES (L)
"	E2 078-10062	F	F	F	F	40		"	PICARDIE (L)
"	E2 078-10064	F	G	G	G	70		"	BEAUCE
"	E2 078-10071	G	G	G	G	60		"	ANJOU
"	E2 078-10073	G	G	G	G	60		"	CHARENTE-GIRONDE
"	E2 078-10080	G	G	G	F	50		"	LANDES (L)
"	E2 078-10082	G	G	F	G	60		"	GOLFE GASCOGNE (L)
3 June 75	E2 132-10070	P	P	P	P	80		1836	ANJOU-VEENDEE
"	E2 132-10073	G	G	G	G	60		"	GIRONDE
"	E2 132-10075	F	G	G	F	70		"	LANDES (L)
"	E2 132-10082	F	G	G	G	60		"	PYRENEES
4 June 75	E2 133-10113	G	P	F	G	40		1850	ARTOIS (L)
"	E2 133-10120	F	F	F	G	30		"	BAIE DE SEINE (L)
"	E2 133-10122	G	P	G	G	60		"	BAIE DE SEINE (L)
"	E2 133-10125	G	F	G	G	50		"	VEENDEE (L)
"	E2 133-10131	G	F	F	G	50	⊕	"	GIRONDE (L)
"	E2 133-10134	F	P	G	G	40	⊕	"	LANDES (L)
6 June 75	E2 135-10233	F	P	P	F	20		1878	JERSEY-COTENTIN (L)
"	E2 135-10235	F	F	G	F	30	⊕	"	BAIE ST MICHEL (L)
"	E2 135-10242	F	F	G	F	60		"	MORBIHAN (L)
8 June 75	E2 137-10352	F	G	G	G	50		1906	OUESSANT (L)
21 June 75	E2 150-10060	F	F	F	F	40		2087	FLANDRES (L)
"	E2 150-10071	F	F	G	G	50		"	TOURAIN
"	E2 150-10074	G	G	G	G	(a) 30		"	GIRONDE (L)
"	E2 150-10080	F	F	G	G	10		"	ARCACHON (L)
"	E2 150-10083	G	G	G	G	10		"	GOLFE DE GASCOGNE (L)
22 June 75	E2 151-10135	F	F	F	G	20		2101	ARCACHON (L)
26 June 75	E2 155-10353	F	F	F	F	40		2157	MER CELTE (L)
9 July 75	E2 168-10073	G	G	G	G	50		2338	SAINTONGE
"	E2 168-10080	G	G	G	G	50		"	ARCACHON (L)
"	E2 168-10082	F	G	G	G	40		"	GOLFE DE GASCOGNE (L)
14 July 75	E2 173-10352	G	F	G	G	30		2408	OUESSANT (L)
27 July 75	E2 186-10071	G	G	G	G	0		2589	CHARENTE
"	E2 186-10073	G	F	G	G	10		"	ARCACHON (L)
"	E2 186-10080	G	G	G	G	40		"	COTE D'ARGENT (L)
28 July 75	E2 187-10111	F	P	G	X	30		2603	PAS-DE-CALAIS (L)
"	E2 187-10114	F	F	G	G	30		"	PICARDIE (L)
"	E2 187-10120	G	F	G	G	50		"	BAIE DE SEINE (L)
"	E2 187-10123	G	F	G	G	20		"	ANJOU
"	E2 187-10125	G	G	G	G	20		"	CHARENTE (L)
"	E2 187-10132	G	G	F	G	10		"	ARCACHON (L)
"	E2 187-10134	F	G	G	F	10		"	GOLFE DE GASCOGNE (L)
29 July 75	E2 188-10172	F	F	F	F	10		2617	MANCHE/BAIE DE SEINE (L)
"	E2 188-10181	F	F	F	G	10	⊕	"	ESTUAIRE LOIRE (L)
"	E2 188-10183	F	G	F	F	0	⊕	"	VEENDEE-CHARENTE (L)
"	E2 188-10190	F	F	F	G	0		"	LARGE DES LANDES
30 July 75	E2 189-10230	F	F	F	F	10		2631	N COTENTIN (L)
"	E2 189-10233	F	F	F	G	10	⊕	"	GOLFE ST MALO (L)
"	E2 189-10235	F	F	F	G	10		"	MORBIHAN (L)
"	E2 189-10242	F	F	F	F	10		"	GOLFE DE GASCOGNE
4 Sept. 75	E2 225-10222	G	G	F	G	50		3133	ANGLETERRE/COTENTIN (L)
20 Sept. 75	E2 241-10120	F	G	G	G	50		3356	CHARENTE/GIRONDE (L)
"	E2 241-10123	F	F	G	G	40		"	ARCACHON/LANDES (L)
"	E2 241-10125	F	F	F	F	30		"	ST JEAN DE LUZ (L)

DATE	PRODUCT ID	BLACK AND WHITE PRODUCTS				CLOUD COVER (%)	TAPE PRODUCT	ORBIT NUMBER	- 12 -
		MSS (Quality)							CODE OF FRAMES (L = Littoral)
		4	5	6	7				
8 oct. 75	E2 259-10110	F	F	G	G	20		3607	BAIE DE SEINE (L)
"	E2 259-10113	-	G	G	F	50		"	ANJOU
25 oct. 75	E2 276-10060	F	F	F	F	50		3844	DORDOGNE
28 oct. 75	E2 279-10215	F	F	F	F	30		3886	COTENTIN NORD (L)
"	E2 279-10222	F	F	F	F	10	⊕	"	G. NORMAND-BRETON (L)
"	E2 279-10224	F	F	F	G	10	⊕	"	BRETAGNE SUD (L)
19 déc. 75	E2 331-10104	G	G	G	G	10		4611	TOURAIN
"	E2 331-10110	G	G	G	G	10		"	CHARENTE
"	E2 331-10113	G	G	G	G	30		"	ARCACHON
20 déc. 75	E2 332-10165	F	G	F	F	10		4625	OLONNE (L)
"	E2 332-10171	F	G	G	G	20			LANDES (L)

